

Notice of Allowability

Application No.

10/797,117

Applicant(s)

HAMAMOTO, KAZUAKI

Examiner

David A. Rogers

Art Unit

2856

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address--

All claims being allowable, PROSECUTION ON THE MERITS IS (OR REMAINS) CLOSED in this application. If not included herewith (or previously mailed), a Notice of Allowance (PTOL-85) or other appropriate communication will be mailed in due course. **THIS NOTICE OF ALLOWABILITY IS NOT A GRANT OF PATENT RIGHTS.** This application is subject to withdrawal from issue at the initiative of the Office or upon petition by the applicant. See 37 CFR 1.313 and MPEP 1308.

1. ☒ This communication is responsive to Amendment filed 18 October 2005.
2. ☒ The allowed claim(s) is/are 1,4,6-11,13 and 14.
3. ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some* c) ☐ None of the:
- ☒ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. _____.
 - ☐ Copies of the certified copies of the priority documents have been received in this national stage application from the International Bureau (PCT Rule 17.2(a)).

* Certified copies not received: _____.

Applicant has THREE MONTHS FROM THE "MAILING DATE" of this communication to file a reply complying with the requirements noted below. Failure to timely comply will result in ABANDONMENT of this application.
THIS THREE-MONTH PERIOD IS NOT EXTENDABLE.

4. ☐ A SUBSTITUTE OATH OR DECLARATION must be submitted. Note the attached EXAMINER'S AMENDMENT or NOTICE OF INFORMAL PATENT APPLICATION (PTO-152) which gives reason(s) why the oath or declaration is deficient.
5. ☐ CORRECTED DRAWINGS (as "replacement sheets") must be submitted.
- (a) ☐ including changes required by the Notice of Draftsperson's Patent Drawing Review (PTO-948) attached
- 1) ☐ hereto or 2) ☐ to Paper No./Mail Date _____.
- (b) ☐ including changes required by the attached Examiner's Amendment / Comment or in the Office action of Paper No./Mail Date _____.
- Identifying indicia such as the application number (see 37 CFR 1.84(c)) should be written on the drawings in the front (not the back) of each sheet. Replacement sheet(s) should be labeled as such in the header according to 37 CFR 1.121(d).
6. ☐ DEPOSIT OF and/or INFORMATION about the deposit of BIOLOGICAL MATERIAL must be submitted. Note the attached Examiner's comment regarding REQUIREMENT FOR THE DEPOSIT OF BIOLOGICAL MATERIAL.

Attachment(s)

- | | |
|---------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------|
| 1. <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 5. <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 2. <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 6. <input type="checkbox"/> Interview Summary (PTO-413),
Paper No./Mail Date _____. |
| 3. <input type="checkbox"/> Information Disclosure Statements (PTO-1449 or PTO/SB/08),
Paper No./Mail Date _____ | 7. <input checked="" type="checkbox"/> Examiner's Amendment/Comment |
| 4. <input type="checkbox"/> Examiner's Comment Regarding Requirement for Deposit
of Biological Material | 8. <input checked="" type="checkbox"/> Examiner's Statement of Reasons for Allowance |
| | 9. <input type="checkbox"/> Other _____. |

EXAMINER'S AMENDMENT

1. An examiner's amendment to the record appears below. Should the changes and/or additions be unacceptable to applicant, an amendment may be filed as provided by 37 CFR 1.312. To ensure consideration of such an amendment, it MUST be submitted no later than the payment of the issue fee. Authorization for this examiner's amendment was given in a telephone interview with James Barlow on 07 November 2005. The application has been amended as follows:

Rejoin claims 6 and 7.

Cancel claims 3, 5, and 15

Amend claims 1, 4, 6, 9, 13, and 14 as follows:

1. A capacitive humidity sensor comprising:
 - a semiconductor substrate;
 - a detection portion including:
 - a pair of detection electrodes disposed to oppose each other on the semiconductor substrate; and
 - a moisture sensitive film disposed on the pair of detection electrodes, so that the moisture sensitive film changes a capacitance thereof according to humidity;
 - a reference portion including a pair of reference electrodes disposed to oppose each other on the semiconductor substrate;
 - a converting means for converting a difference between a capacitance of the pair of reference electrodes and a capacitance of the pair of detection electrodes to an electric signal; and
 - a capacitance adjusting gel film disposed on the pair of reference electrodes in order to reduce a difference between the capacitance of the pair of reference electrodes and the capacitance of the pair of detection electrodes in a reference humidity condition,
- wherein the detection electrodes and the reference electrodes are substantially equal in pattern and size; and

wherein the moisture sensitive film and the capacitance adjusting gel film have substantially equal permittivity in the reference humidity condition.

4. The capacitive humidity sensor according to claim [[3]] 1, wherein the ~~moisture permeation-capacitance adjusting gel~~ film is provided not only in the reference portion but also on the moisture sensitive film of the detection portion.

6. The capacitive humidity sensor according to claim 1, wherein: ~~the capacitance adjusting gel film includes:~~

the moisture sensitive film extending to cover not only the detection portion but also the reference portion; and

a moisture blocking film provided on the moisture sensitive film in the reference portion.

9. The capacitive humidity sensor according to claim 1, further comprising:

a first insulation film provided between the detection electrodes and the semiconductor substrate, and between the reference electrodes and the semiconductor substrate; and

a second insulation film provided between the detection electrodes and the moisture sensitive film, and between the reference electrodes and the capacitance adjusting gel film.

13. A capacitive humidity sensor comprising:

a semiconductor substrate;

a detection portion including:

a pair of detection electrodes disposed to oppose each other on the semiconductor substrate; and

a moisture sensitive film disposed on the pair of detection electrodes, so that the moisture sensitive film changes a capacitance thereof according to humidity;

a reference portion including a pair of reference electrodes disposed to oppose each other on the semiconductor substrate;

a converting means for converting a difference between a capacitance of the pair of reference electrodes and a capacitance of the pair of detection electrodes to an electric signal; and

a capacitance adjusting gel film disposed on the pair of reference electrodes in order to reduce a difference between the capacitance of the pair of reference electrodes and the capacitance of the pair of detection electrodes in a reference humidity condition, ~~wherein the capacitance adjusting film is a moisture permeation film.~~

14. The capacitive humidity sensor according to claim 13 wherein the ~~moisture permeation~~ capacitance adjusting gel film is provided not only in the reference portion but also on the moisture sensitive film of the detection portion.

Allowable Subject Matter

2. Claims 1, 4, 6-11, 13, and 14 are allowed.
3. The following is an examiner's statement of reasons for allowance.

WO 200142775 to LG Electronics shows a capacitance-based humidity sensor having sensing electrodes (reference item 8) and reference electrodes (reference item 8'). Both electrodes regions are coated with a polyimide film (reference items 9 and 9'). Both films are inherently moisture permeation films and both inherently adjust, i.e., reduce the difference between the capacitance of the reference and sensing electrodes in the preferred embodiment.

U.S. Patent application publication 2001/0015089 to Kleinhans teaches the use of a flourine gel as a protective gel for a capacitive humidity sensor. However, Kleinhans does not teach the use of the gel film for reducing the difference between the capacitance of the reference and sensing electrodes.

Any comments considered necessary by applicant must be submitted no later than the payment of the issue fee and, to avoid processing delays, should preferably accompany the issue fee. Such submissions should be clearly labeled "Comments on Statement of Reasons for Allowance."

Conclusion

4. Any inquiry concerning this communication or earlier communications from the examiner should be directed to David A. Rogers whose telephone

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number is (571) 272-2205. The examiner can normally be reached on Monday - Friday (0730 - 1600).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Hezron E. Williams can be reached on (571) 272-2208. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

dak

07 November 2005



HEZRON WILLIAMS
SUPERVISORY PATENT EXAMINER
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